

AMENDMENT TO THE SPECIFICATION

Please amend the specification by inserting at page 13, after the last full paragraph, the following new paragraphs.

One particular embodiment of the invention is directed to a system and a method for providing comprehensive fire prevention and suppression in different compartments of an aircraft by producing oxygen-depleted or hypoxic air from a bleed air, said system comprising:

an air-separation device receiving said bleed air from an aircraft engine and using its pressure and flow, as a driving force, for separating it into oxygen-enriched and oxygen-depleted gas mixtures;

said oxygen-enriched gas mixture being normally vented outside the aircraft or, in case of an emergency, supplied to passengers and the crew via respiratory masks;

said oxygen-depleted gas mixture being constantly supplied into fuel tanks for maintaining there a hypoxic environment in order to prevent a fuel ignition; the oxygen content in said environment is maintained below 12% and, preferably, at 10%;

said oxygen-depleted gas mixture being selectively supplied into cargo compartments of the aircraft establishing there a constant fire-preventive atmosphere or emergency fire-suppression environment, depending on design or situation; the oxygen content in said fire-preventive atmosphere being maintained in the range from 12% to

16% and from 8% to 12% in said emergency fire-suppression environment;

an optional pressurized container having sufficient amount of said hypoxic air in order to accelerate the flooding of the passenger cabin and the formation there a breathable fire extinguishing atmosphere in a case of a fire;

said breathable fire-extinguishing atmosphere being established and maintained for as long as needed by supplying a sufficient flow of the oxygen-depleted gas mixture from said air-separation device; the oxygen content in said breathable fire-extinguishing atmosphere is maintained in the range from 12% to 16%;

a mixing device for providing, when needed the mixing of said oxygen-depleted gas mixture with said bleed air in order to increase and regulate the oxygen content in the cabin and different compartments of the aircraft;

a smoke and fire detection system with sensors installed in every compartment throughout the whole aircraft's interior;

an oxygen content monitoring system providing the oxygen content data in different compartments; and

a computerized control panel for receiving and analyzing data from the smoke and fire detection and oxygen monitoring systems and regulating, when needed, the oxygen content in protected

compartments by releasing, increasing or decreasing the flow of said oxygen-depleted gas mixture or by altering its mixture ratio with air.

A hypoxic gas mixture from said mixing device is supplied in amount equal or larger than the leakage rate from the protected compartment allowing to maintain the designed oxygen content by ventilating the compartment with said hypoxic mixture.

Another particular embodiment of the invention is directed to a method and a system for extinguishing fires using water mist propelled by hypoxic air; said system and method comprising:

- an air-separation device providing hypoxic air in amount and under pressure sufficient for propulsion of water through a water mist generating nozzle;

- a water mist generating nozzle producing water mist propelled by hypoxic air;

- said hypoxic or oxygen-depleted air having an oxygen content in the range from 8% to 15% or 1%-8% in special cases;

- when deployed, said system generates and releases water mist inside a protected area, said water mist propelled by said hypoxic air that simultaneously gradually dilutes the internal atmosphere and decreases its oxygen content to the fire extinguishing level;

- the oxygen content in said hypoxic air propelling water mist being below 15% and, preferably in the range from 8% to 12%; and

the amount of water in said water tank being calculated to be sufficient to produce water mist for the period of time needed to establish said fire-extinguishing level;

said method and system designated for extinguishing fires in aircraft, marine vessels, buildings, all type of vehicles and other enclosed and semi-enclosed structures.

Yet another embodiment is direct to extinguishing fires using a foam propelled by hypoxic air, said system and method comprising:

air-separation device providing hypoxic air in amount and under pressure sufficient for propulsion and production of a hypoxic foam;

a tank for storing and supplying the system with a foam with generating solution propelled by said hypoxic air;

a foam generating device or nozzle producing said foam with hypoxic air;

said hypoxic or oxygen-depleted air having an oxygen content in the range from 8% to 15% or 1-8% in special cases;

when deployed, said system generates and releases the hypoxic foam inside a protected area simultaneously with said hypoxic air that gradually dilutes the internal atmosphere and decreases its oxygen content to the fire extinguishing level;

the oxygen content in said hypoxic air-producing and propelling said foam being below 16% and, preferably in the range from 8% to 12%;

the amount of the foam generating solution in said tank being calculated to
be sufficient to produce said foam for the period of time needed to
establish said fire-extinguishing level;
said method and system designed for extinguishing fires in aircraft, marine
vessels, buildings, all type of vehicles and other enclosed and semi-
enclosed structures.